



INTRODUCTION TO CHEMISTRY (CHEM 101)

Assessment on Chapter 07 - Topic 19

1. Organic compounds MUST contain the element

- a. N b. C c. O d. F

2. Carbon forms a maximum of covalent bonds.

- a. 1 bond. b. 2 bonds. c. 3 bonds. d. 4 bonds. e. 5 bonds.

3. Hydrocarbons are generally insoluble in water, because they are nonpolar.

- a. True b. False

4. Hydrocarbons are and in water.

- a. polar and soluble b. polar and insoluble
 c. nonpolar and soluble d. nonpolar and insoluble

5. Which of the following is NOT a hydrocarbon?

- a. CH₄ b. CH₃OH c. CH₃CH₃ d. CCl₄ e. Two of the above

6. What is the general formula for an alkane?

- a. C_nH_{2n+2} b. C_nH_{2n+1} c. C_nH_{2n} d. C_nH_{2n-1} e. C_nH_{2n-2}

7. Which of the following is an alkane?

- a. CH₄ b. C₃H₈ c. CH₃CH₃ d. C₈H₁₈ e. All of the above

8. What is the class of hydrocarbons that contain only carbon-carbon single bonds?

- a. alkane b. aldehyde c. alkene d. haloalkane

9. Saturated hydrocarbons contain only bonds.

- a. single b. double c. triple d. quadruple

10. Compounds that have the same molecular formula but, differ in the way the atoms are arranged are called

- a. isotopes b. isomers c. homologs d. allotropes

11. The simplest alkane is methane.

- a. True b. False

12. The name of the hydrocarbon with three carbon atoms and having only single bonds between carbon atoms is:

- a. decane. b. butane. c. propane. d. ethane. e. methane.

13. The hydrocarbon C_2H_6 is

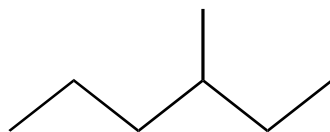
- a. An alkane b. An alkene c. An alkyne d. Cyclical e. Two of the above

14. What is the name of this compound?



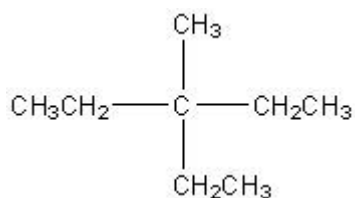
- a. ethane b. propane c. butane d. pentane e. hexane

15. How many carbon atoms are in the following condensed structure?



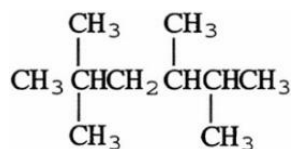
- a. 5 b. 6 c. 7 d. 8

16. Give the IUPAC name for the branched alkane pictured below.



- a. 3-methylheptane b. 3-methyl-3-ethylpentane
 c. 4,4-diethylbutane d. 3-ethyl-3-methylpentane

17. The molecule shown below is named as a substituted because

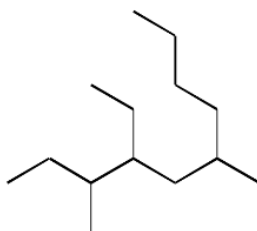


- a. decane; it contains 10 atoms of carbon.
- b. hexane; it contains six atoms of carbon in its longest chain.
- c. tetramethane; it contains four methyl groups as branches.
- d. hexamethane; it contains six methyl groups altogether.
- d. butane; four carbons are substituted onto the chain.

18. The condensed structure of 2,2,4,4-tetramethylheptane is

- a. $\begin{array}{c} \text{CH}_3 \text{CHCH}_2 \text{CHCH}_2 \text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$
- b. $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{CH}_3\text{CHCH}_2\text{CHCH}_2\text{CH}_2\text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$
- d. $\begin{array}{c} \text{CH}_3 \text{CHCH}_2 \text{CHCH}_2 \text{CH}_2 \text{CH}_2 \text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$
- d. $\begin{array}{c} \text{CH}_3 \text{CHCH}_2 \text{CHCH}_2 \text{CH}_2 \text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$

19. Give the IUPAC name for the branched alkane pictured below.



- a. 6-butyl-4-ethyl-3-methylheptane
- b. 2-butyl-4-ethyl-5-methylheptane
- c. 4-ethyl-3,6-dimethyldecane
- d. 7-ethyl-5,8-dimethyldecane
- e. 4-ethyl-3,6-methyldecane

20. In the name cyclohexane, the prefix *cyclo* means that

- a. the compound is explosive
- b. the carbon atoms are joined in a ring
- c. the compound is a derivative of benzene
- d. the carbons have a valence of three

21. What is the general formula for cycloalkanes?

- a. $\text{C}_n\text{H}_{2n+2}$
- b. $\text{C}_n\text{H}_{2n+1}$
- c. C_nH_{2n}
- d. $\text{C}_n\text{H}_{2n-1}$
- e. $\text{C}_n\text{H}_{2n-2}$



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Assessment on Chapter 07 - Topic 20

1. What is the general formula for alkenes?

- a. C_nH_{2n+2} b. C_nH_{2n+1} c. C_nH_{2n} d. C_nH_{2n-1} e. C_nH_{2n-2}

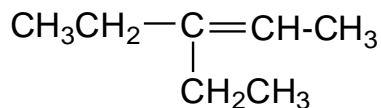
2. What is the general formula for alkynes?

- a. C_nH_{2n+2} b. C_nH_{2n+1} c. C_nH_{2n} d. C_nH_{2n-1} e. C_nH_{2n-2}

3. Which of the following is an unsaturated hydrocarbon?

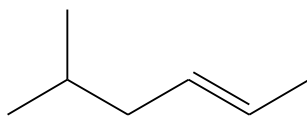
- a. C_2H_6O b. C_3H_6 c. C_4H_{10} d. $C_{10}H_{22}$ e. All of them

4. What is the name of the following compound?



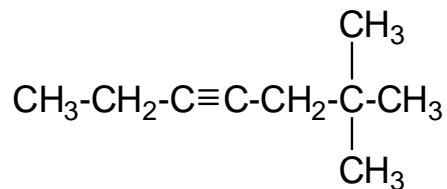
- a. 3-ethyl-2-pentene b. 3-ethyl-2-pentane
 c. 3-ethyl-3-pentene d. 3-dimethyl-3-pentene
 e. 3-ethylpentene

5. What is the IUPAC name for the following compound?



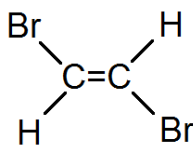
- a. 5-methyl-2-hexene b. 1,2-dimethylhexene
 c. 2,5,-dimethylhexane d. 2-methyl-5-hexane

6. What is the IUPAC name for the following compound?



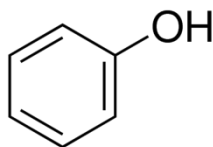
- a. 2,2-dimethyl-5-heptyne b. 2-methyl-6-octyne
 c. 6,6-dimethyl-3-heptyne d. 6,6-dimethyl-3-hexane

7. The following molecule is a *cis* or *trans* isomer?



- a. *cis*, because the two Br atoms are on the same side.
 b. *trans*, because the two Br atoms are on the same side.
 c. *cis*, because the two Br atoms are on opposite sides.
 d. *trans*, because the two Br atoms are on opposite sides.

8. What is the common name of the following compound?



- a. toluene b. aniline c. benzene d. phenol



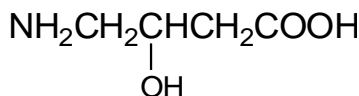
INTRODUCTION TO CHEMISTRY (CHEM 101)

Assessment on Chapter 07 - Topic 21

1. The -COOH functional group is called a(n)

- a. carboxyl group
- b. carbonyl group
- c. aldehyde group
- d. hydroxyl group

2. What functional groups are present in the following compound?



- a. Amino, alcohol, ketone
- b. Amine, alcohol, carbonyl
- c. Amine, alcohol, carboxylic acid
- d. Amine, phenol, carboxylic acid
- e. Amide, alcohol, carboxylate

3. Which listed type of compound does NOT contain a carbonyl group?

- a. Carboxylic acid
- b. Ether
- c. Ester
- d. Ketone
- e. Aldehyde

4. Which of the following types of compounds contain the hydroxyl functional group?

- a. Alcohol
- b. Ether
- c. Ester
- d. Ketone
- e. Aldehyde

5. Which functional group below contains a carbonyl (C=O) group?

- a. alcohol
- b. ether
- c. carboxylic acid
- d. amine

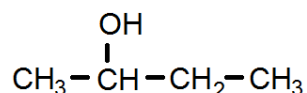
6. Which functional group below does not contain any oxygen atoms?

- a. amine
- b. amide
- c. ester
- d. ether

7. Which set of functional groups contains only ones that contain nitrogen?

- a. amines, amides, and carboxylic acids
- b. alcohols and ethers
- c. amines and amides
- d. alkenes, alkynes, and aromatics

8. The following alcohol is classified as



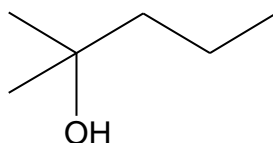
- a. primary b. secondary c. tertiary d. quaternary

9. The IUPAC name for the following compound is



- a. 1-methylpentanol b. hexyl alcohol
 c. phenol d. 1-hexanol

10. What is the class of the following alcohol?



- a. primary b. secondary c. tertiary d. quaternary

11. To what organic family does $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_3$ belong?

- a. alcohol b. carboxylic acid c. aldehyde d. ether

12. Which of the following compounds is an aldehyde?

- a. Propanol b. Propanone
 c. Methyl propanoate d. Propanal
 e. Toluene

13. When an aldehyde is oxidized, the product is a(n)

- a. alcohol b. aldehyde c. ketone d. carboxylic acid

14. A ketone must have at least 3 carbon atoms.

- a. True b. False

15. Esters are formed from the reaction between

- a. alcohol and aldehyde. b. ether and carboxylic acid.
 c. ketone and alcohol. d. alcohol and carboxylic acid.
 e. None of the above

16. What two types of compounds are reacted together to produce an ester?

- a. A carboxylic acid and a base
 b. A carboxylic acid and an alcohol
 c. A base and an alcohol
 d. Two different carboxylic acids

17. Carboxylic acids react with to form esters and water.

- a. amines
 b. alcohols
 c. alkanes
 d. alkenes

18. Which molecule is acetone?

- a. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$
 b. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
 c. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_3$
 d. $\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_3$

19. Which of the following molecules is a carboxylic acid?

- a. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$
 b. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{CH}_2-\text{CH}_3$
 c. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$
 d. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{N}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_3$

20. Which of the following molecules is an amide?

- a. $\text{CH}_3-\text{N}-\text{H}$
 $\quad\quad\quad |$
 $\quad\quad\quad \text{H}$
 b. $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$
 c. $\text{CH}_3-\text{CH}_2-\text{N}-\text{CH}_3$
 $\quad\quad\quad |$
 $\quad\quad\quad \text{CH}_3$
 d. 